alternative proposal would be more efficient. However, Starsys does have certain additional concerns related to those proposals as they impact the Starsys system itself.

1. Issues in the 137-138 MHz band.

The Commission notes that NOAA and Orbcomm have been coordinating use the 137-138 MHz band and that Orbcomm will have to migrate some of its operations to two of the NOAA channels, 137.485-137.515 MHz and 137.605 and 137.635 MHz. 14/ Starsys opposes the migration of Orbcomm to these NOAA channels and proposes instead that Orbcomm migrate to NOAA's other channels at 137.333-127-367 MHz and 137.753-137.787 MHz. Orbcomm and Starsys worked closely to insure that the Orbcomm system minimized its interference to the Starsys signal at 137.5 MHz. A significant factor in the sharing agreement between the two companies was that Orbcomm would attempt to locate its 25 kHz service link channels as far away from Starsys as possible to avoid causing major interference to the Starsys system. To facilitate the existing sharing agreement, it is important that any relocation of Orbcomm's channels be to locations at the maximum frequency effect possible from 137.5 MHz. By relocating Orbcomm to the more distant NOAA channels, it is recognized that other applicants may wish to use the two closest "NOAA channels" to the GE Starsys centerline.

14/ Notice at para. 53.

However, new licensees' systems will have the option to use two 15 kHz channels in each NOAA channel and could better accommodate lower power settings to minimize interference to the GE Starsys downlink.

If new systems are licensed in the 137-138 MHz band, it will be incumbent upon the licensee to conduct a sharing evaluation on the impact of transmissions on the Starsys system. This evaluation can be conducted using Draft New Recommendation ITU-R [8D/XQ], "Methodology for Evaluating Interference from Narrowband Mobile Satellite Networks to Spread-Spectrum Direct-Sequence Mobile Satellite Networks Operating with Space Stations in Low Earth Orbit at Frequencies below 1 GHz." This recommendation is contained in Document 8D/TEMP/72(Rev.1)-E, dated November 7, 1996, as approved at ITU-R WP 8D in Geneva.

In general, as the amount of offset of an FDMA channel from the Starsys centerline frequency decreases, the power of the satellite transmission must be reduced to avoid harmful interference when satellites from both systems are present in the main beam of a Starsys ground station antenna at the same time. Systems planning to operate multiple channels simultaneously in this band also will have to consider the impact on Starsys of the power from two or more simultaneously operating channels. In essence, additional licensees would have to share with Starsys using power reductions for operations in the 137-138 MHz band. If permitted, second round licensees may find that the benefit of maximum offset occurs by operating in the edges of the band, which will allow higher power levels,

as opposed to operating in the NOAA channels that are located closer to the Starsys centerline at 137.5 MHz.

Starsys has long anticipated that the NOAA meteorological satellites would move from the temporary channels in the center of the 137-138 MHz band to the wider bands at either end of the 137-138 MHz band. When this occurs, Starsys would be able to increase the power of its feeder downlink somewhat without exceeding the meteorological satellite criteria for interference in their channels. This would have a double benefit: (a) it would allow GE Starsys a more robust link budget, and (b) it would allow the FDMA Little LEO satellites sharing the band to transmit at higher levels when in the Starsys ground station main antenna beam. Therefore, Starsys supports the earliest movement of the NOAA satellite channels to the more offset "NOAA bands" at either side of the 137-138 MHz band.

2. Issues in the 149.9-150.05 MHz band.

The Commission has identified only 100 of the 150 kHz available to NGO MSS < 1 GHz in this band based on sharing the other 50 kHz with the French S80-1 system. However, we note that no S80-1 feeder links are anticipated in the United States. Furthermore, the anticipated use of this band by the French system is for feeder links only, and therefore it can be shared on a geographical basis. The restrictive nature of the sharing requirements for RNSS make this band much more amenable for stationary MSS systems such as feeder links than for mobile use. Accordingly, GE Starsys recommends that the entire 150 kHz be made available to

all Little LEO applicants on a non-exclusionary basis with the requirement that geographical coordination be maintained.

Starsys makes this point to underscore that with this additional 50 kHz of spectrum, there is even less reason to adopt rules that would foreclose us from using an equivalent amount of spectrum for our feeder links. 15/

IV. THE COMMISSION SHOULD NOT USE AUCTIONS IN THE SATELLITE SERVICE CONTEXT.

Starsys strongly opposes any use of auctions to resolve the second NVNG processing round. We believe that auctions would have highly negative consequences both with respect to Little LEO service itself, and with respect to satellites generally. We say this as the party in this proceeding who may be best positioned financially to win an auction. Notwithstanding this private advantage, we believe that the public disadvantages of satellite spectrum auctions are compelling and conclusive.

15/ Another issue presented by the proposal to use this band is sharing with the Russian RNSS. A recently completed sharing study on this band identifies the need for MSS terminals to either maintain a coordination distance from navigable waterways or utilize a terminal-based sensor to avoid transmitting when an RNSS satellite is transmitting in the area. Although this can be done, a mobile terminal using a terminal-based sensor will be very different from the normal DCAAS type system employed by FDMA systems in the 148.0-149.9 MHz band, and the NVNG MSS satellites will have to withstand strong transmission signals from the radio navigation satellites. Furthermore, the Russians indicated at WP 8D in November 1996 that they intend to continue adding satellites to the RNSS system operating in these bands. Currently, Starsys has observed nine RNSS satellites transmitting in the 149.9-150.05 MHz band.

The Commission itself recognizes that "auctions for transnational satellite services raise issues that are considerably more complex and difficult than issues raised" in the context of domestic terrestrial services. 16/ The Commission observes that auctions in this country could result in sequential auctions in other countries. Such auctions would create substantial uncertainty regarding where and at what cost an NVNG system could provide service. The Commission also recognizes that auctions can conflict with the treaty obligations of the United States to coordinate its satellite systems internationally with other countries. 17/

Starsys strongly agrees that these problems make auctions unsuitable for satellite services. Indeed, NVNG is almost a case study in why auctions do not make sense. Licenses will be required in each of the countries where NVNG service is offered. Without them we will not be able to take reasonable advantage of the global nature of NVNG service, and provide world-wide coverage to customers. Starsys has been engaged in this licensing process for some time. However, we confront the problem that spectrum is limited, and that sharing and coordination must be carefully negotiated. This process is difficult enough as it is. It could become impossible if other countries were encouraged to view NVNG spectrum as a revenue source to be auctioned. Incentives to negotiate sharing and coordination would be substantially reduced, at the least delaying service and in some cases

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16/ Notice at para. 80.

17/ Id., paras. 80-81.

making service prohibitive or impossible. Other countries might hold back what little spectrum is available in hopes of selling it at a higher price once NVNG is more developed elsewhere, delaying service to the public. The full ramifications of auctions are difficult to predict. But as the Notice recognizes, this very uncertainty itself increases risk and could therefore deter investment in what is inherently a service with a high upfront fixed costs.

More generally, auctions in this service could unleash forces that could lead to auctions in the context of other satellite services. There is reason to fear that other nations may claim orbital positions or satellite spectrum as a "natural resource" to be sold, even where they do not have pending requirements for the spectrum themselves. The Commission is well aware of the problems that already exist in the ITU advance publication process. A material risk exists that if the U.S. begins to auction spectrum used for international services to other nations, then those nations will be far more inclined to claim spectrum themselves so that they can speculate in this potential source of revenues. The result could be a further breakdown in the ITU processes, and increased delay in the provision of all new satellite services to the public.

It is relevant here that U.S. satellite firms are the primary parties that would be damaged by such delay and uncertainty. We benefit from the current environment of open planning and coordination, which for all its flaws has enabled the U.S. to lead the way in commercialization of space communications. We hope that the current WTO process will result in a further opening of markets around

the world. Satellite auctions would run directly counter to these initiatives, and could easily become a new barrier to entry.

The problems with satellite auctions are discussed in more detail in a study prepared on behalf of the Satellite Industry Association that Starsys understands will be incorporated in this docket. 18/ For that reason we will not discuss them further here. We strongly support the conclusions and warnings in that report.

Given what the Commission characterizes as these "problematic issues," 19/ we were disappointed that the Notice includes a request for comments on use of auctions to award NVNG licenses. We hope that the Commission indeed "will continue to try to accommodate all those who seek to provide global Little LEO satellite service." 20/ We are cautiously optimistic that the applicants will be able to negotiate a settlement, especially if they have additional spectrum from WRC-95 and WRC-97 to work with.

At the least, rather than consider auctions further the Commission should consider sponsoring a negotiated rulemaking similar to the one that was held among the first round applicants. That negotiation, held under the FCC's

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18/ See Strategic Policy Research, Public Harms Unique to Satellite Spectrum Auctions (presented to the FCC International Bureau on Mar. 18, 1996).

19/ Notice at para. 80.

20/ Id.

auspices, could be organized to address both pre- and post-WRC-97 spectrum usage by the applicants. Starsys believes that this process can be successful. But to the extent that the mutual exclusivity nevertheless remains at the end of the day, notwithstanding WRC-97, then the Commission should make selections based on its established standards, including financial qualifications and coordination criteria. In no event should it move to satellite spectrum auctions.

V. THE COMMISSION SHOULD AMEND ITS FINANCIAL QUALIFICATIONS RULES WITHIN THE LIMITS OF DUE PROCESS TO THE CURRENT APPLICANTS.

As a general matter, Starsys supports the requirement that Little LEO applicants meet the financial qualifications standard applied in the case of fixed and Big LEO satellite services. 21/ We therefore agree that an applicant should be required to demonstrate that it has the finances necessary to construct, launch and operate its entire system for a year. This standard has served a valuable function in other services by preventing an under-capitalized party from blocking the provision of service by other firms that are ready and able to do so. We note that financial qualifications issues are pending against several of the second round applicants even under the current relaxed financial standard. We have elsewhere urged the Commission to make financial qualifications decisions so that competition for the limited NVNG spectrum can be reduced in that way. We continue to believe that such action is in the public interest.

21/ See Notice at para. 40.

It is another matter whether the Commission can or should change the rules retroactively so that the more stringent financial standard proposed in the Notice is applied against the current applicants. Starsys believes that any change in the financial qualifications standard should be imposed on applications filed after the date that the Notice was released. 22/

VI. OTHER MATTERS

A. Unauthorized Transmissions

The Commission notes that Little LEO earth terminals are inherently mobile, and therefore users may attempt to operate them in countries where the satellite system operator is not authorized to provide service. The Commission asks for comment on effective methods of preventing unauthorized transmissions. The Commission asks how the cost of such methods would impact second round licensees given that no such requirement applies to first round companies.

As contemplated by the Commission, NVNG terminals would have to be equipped with position determination capability so that the system operator can know the country in which the terminal is located. This can be done in one of two ways. First, a GPS card can be added to the mobile terminal. This would impose additional cost and require additional battery power. Second, a position

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22/ That said, if the Commission nevertheless adopts some form of its "new entrant" policy and applies it retroactively, then it should apply the strict financial qualifications standard retroactively as well.

determination capability can be created using Doppler and possibly ranging if not originally designed in the system. However, this solution would require the addition of extensive software capability to the system, and multiple messages to determine the position of the transmission.

Starsys assumes that the Commission will not impose a positioning requirement retroactively on first round licensees. Given our slow data rate of 600 bps, the requirement for a position read on every transmission would consume a significant portion of each message, and hence affect our overall capacity. The cost to the customer would go up unnecessarily, and the longer message would marginally increase interference to other services sharing the band. Starsys does not believe that positioning requirements should be imposed on second round applicants either. There too the public interest is better served by shorter messages whenever possible. In particular, the Commission should not require inclusion of a GPS card with terminals. Mandatory location determination with each transmission should also be avoided in the interest of economy of spectrum use (shorter messages) and non-interference. NVNG operators may use ranging techniques where necessary to meet customer requirements, and can act accordingly where they have relevant information.

B. Exclusive Arrangements.

Starsys generally supports the proposal in the Notice to adopt limitations on a licensee's ability to enter into exclusive arrangements with other countries regarding communications to or from the United States. 23/ Particularly given the unique circumstances related to NVNG, we agree that the Commission should take an active role to promote competition for these inherently global systems.

CONCLUSION

Starsys appreciates the Commission's work over the past years to help develop NVNG service. We recognize the difficulty that has been presented by the scarcity of spectrum, and the need for hard work to secure additional spectrum in the future. As the Commission considers action in this proceeding, it should keep in mind the relationship between this spectrum development activity, and the applications here. In particular, it should not arbitrarily disqualify Starsys from the non-exclusionary use of the limited spectrum it has requested here. And the Commission should preserve its flexibility on a going-forward basis to assign spectrum to the system proponents who are working to help make that spectrum available in the first place.

23/ Id. at para. 102.

Respectfully submitted,

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and

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CERTIFICATE OF SERVICE

I, hereby certify that on this 20th day of December, 1996, I caused to be served by hand delivery, copies of the foregoing Comments of GE Starsys Global Positioning Inc. and GE American Communications, Inc., addressed to the following:

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